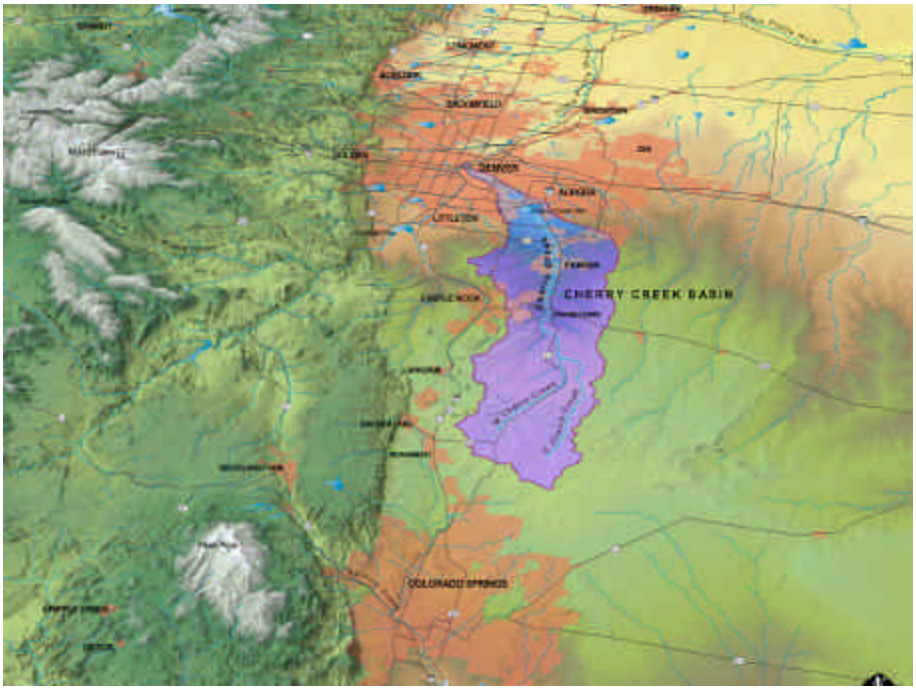
Cherry Creek Stewardship Partners

The Role of Watershed Collaboration Efforts in Source Water Protection

Presentation to the National Source Water Protection Conference
Chris Rowe, Colorado Watershed Network
June 2-4 2003

Our mission is to promote effective stewardship in the Cherry Creek Watershed.



No. 1 in population growth

Douglas County, which led the nation in growth rate in the 1990s, has been the fastest-growing U.S. county since the 2000 census. Maricopa County, Ariz., however, has added five times as many people since April 1, 2000.

By percent change

	County	State	% change
1.	Douglas	Colo.	13.6
2.	Loudoun	Va.	12.6
3.	Forsyth	Ga.	12.1
4.	Rockwall	Texas	11.4
5.	Williamson	Texas	11.2
6.	Henry	Ga.	11.1
7.	Spencer	Ky.	10.8
8.	Flagler	Fla.	10.3
9.	Colin	Texas	10.1
10.	Paulding	Ga.	9.9

Other Colorado counties in the top 100

22.	Elbert	7.9
25.	Weld	7.7
27.	Archuleta	7.7
34.	Park	7.3
74.	Custer	5.4
75.	San Miguel	5.4
87.	Saguache	5.2
95.	San Juan	5.0

By numeric change

	County	State	Population change
1.	Maricopa	Ariz.	122,649
2.	Los Angeles	Calif.	118,156
3.	Riverside	Ga.	90,501
4.	Clark	Nev.	88,888
5.	Harris	Texas	60,011
6.	San Bernardino	Calif.	56,803
7.	Collin	Texas	49,728
8.	San Diego	Calif.	48,986
9.	Broward	Texas	45,542
10.	Sacramento	Calif.	45,271

Other Colorado counties in the top 100

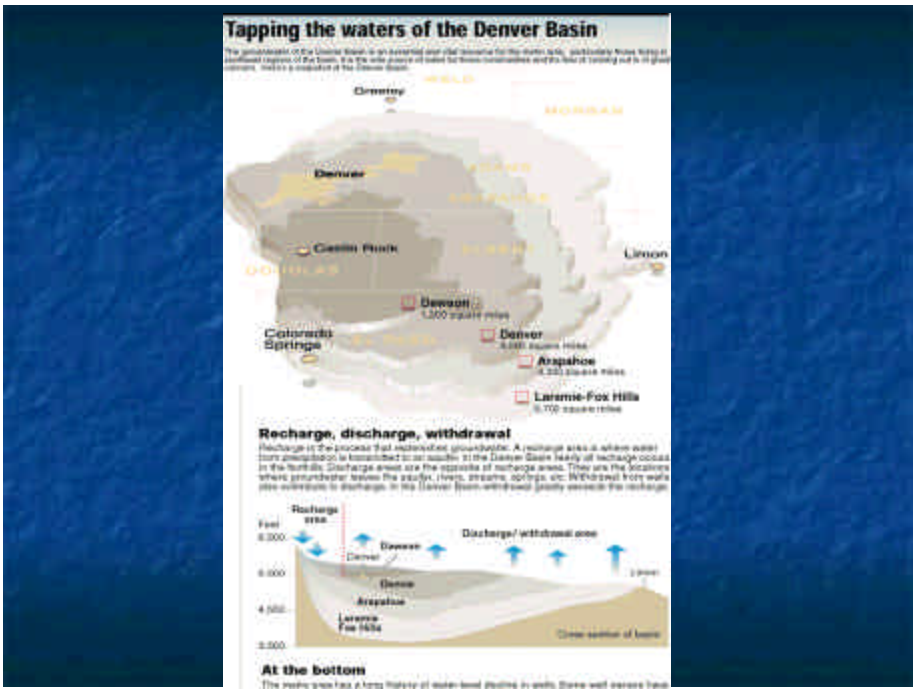
28.	Douglas	23,987
48.	El Paso	16,499
59.	Weld	14,013
65.	Arapahoe	12,816
72.	Adams	11,034

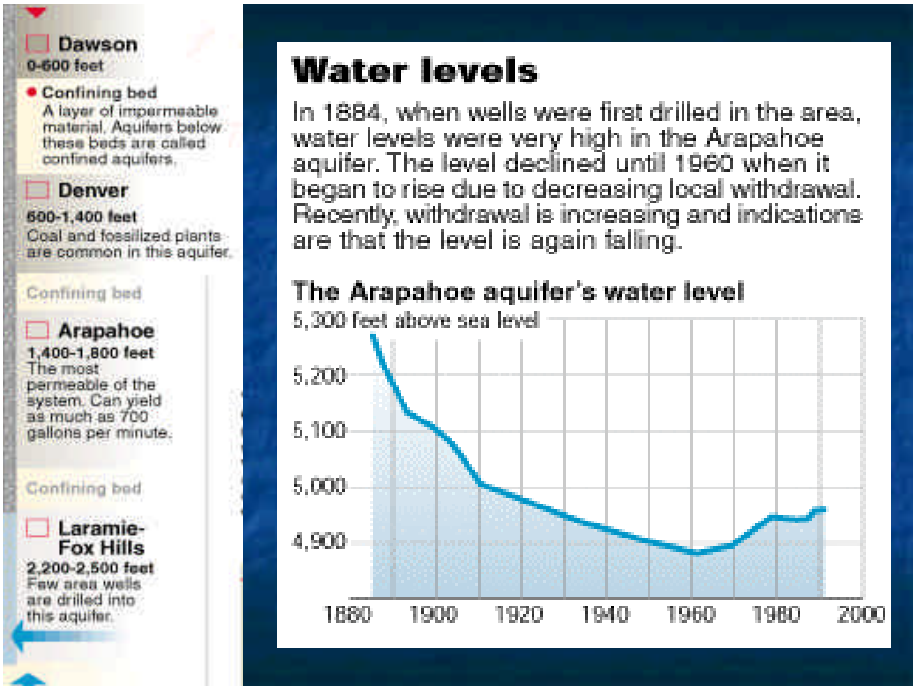
Source: U.S. Census Bureau

The Denver Post

Water Quality Issues

- WATERSHED level causes & effects
- TMDL Control Reg.
- NPDES Phase I & II
- Erosion and Sediment Control
- Drinking Water Protection
- Drought Impacts
- Increased runoff


Tapping the waters of the Denver Basin
Greeley
Denver
Castle Rock
Limon
Dawson
Colorado Springs
Denver
Arapahoe
Laramie-Fox Hills
Recharge, discharge, withdrawal
Recharge area
Discharge/ withdrawal area
Dawson
Denver
Arapahoe
Laramie Fox Hills
At the bottom


Dawson
0-600 feet
Confining bed
A layer of impermeable material. Aquifers below these beds are called confined aquifers.
Denver
600-1,400 feet
Coal and fossilized plants are common in this aquifer.
Confining bed
Arapahoe
1,400-1,800 feet
The most permeable of the system. Can yield as much as 700 gallons per minute.
Confining bed
Laramie-Fox Hills
2,200-2,500 feet
Few area wells are drilled into this aquifer.
Water levels
In 1884, when wells were first drilled in the area, water levels were very high in the Arapahoe aquifer. The level declined until 1960 when it began to rise due to decreasing local withdrawal. Recently, withdrawal is increasing and indications are that the level is again falling.
The Arapahoe aquifer's water level
5,300 feet above sea level
5,200
5,100
5,000
4,900
1880
1900
1920
1940
1960
1980
2000

What is the Partners?

- The *Cherry Creek Stewardship Partners* is an informal association of a broad range of stakeholders interested in issues such as land use management, recreation, cultural preservation, and watershed protection.

Who are the Partners?

- The Partners bring together representatives from the land use jurisdictions, the state and federal resource management agencies, conservation, recreation, and historic preservation groups and the business community.

What are the Partners working on?

- Annual Cherry Creek Conference
- Education and Outreach Activities
- Legacy Planning Project
- Smart Growth for Clean Water
- Watershed Assessment
- Cross-jurisdictional Communication

Legacy Planning Project

- The Partners are actively engaged with the Trust for Public Land in the Cherry Creek Legacy Project.
  - Current watershed conditions, resources and management.
  - Opportunities for land conservation.
  - Stewardship recommendations.
- Cherry Creek Basin Open Space Conservation and Stewardship Plan

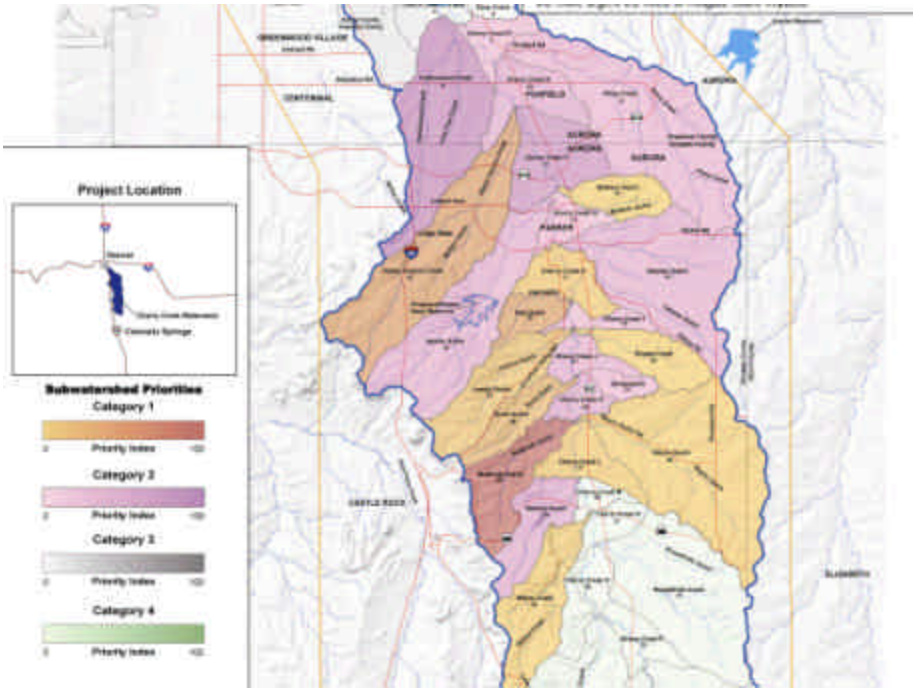
Goals of the Cherry Creek Basin Open Space Conservation and Stewardship Plan

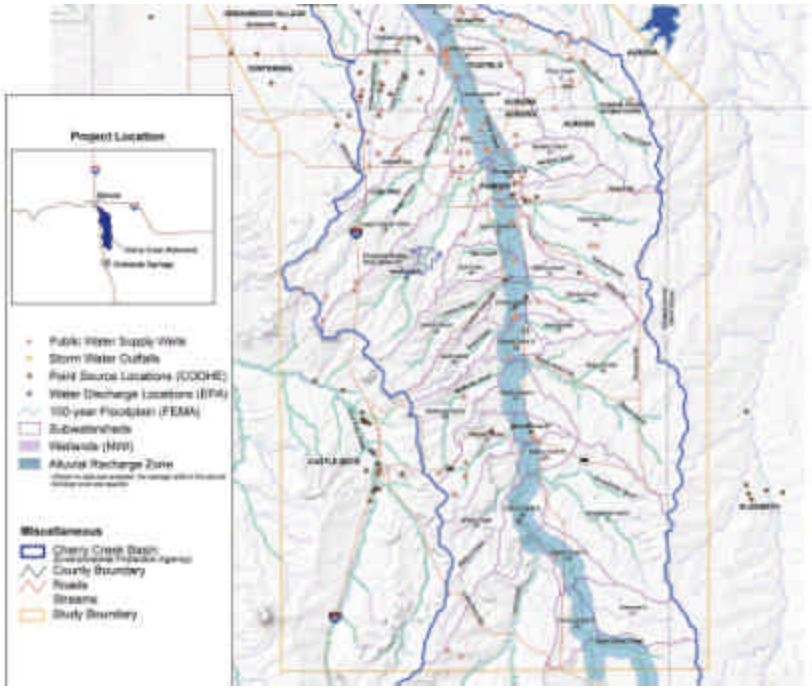
1. Protect high-quality wildlife habitat and wildlife corridors.
2. Foster multi-jurisdictional relationships among local governments, state and federal agencies, and local citizens
3. Help mitigate development-induced water quality impacts.
4. Help meet open space and recreation needs of the region's growing population.
5. Protect important cultural and historic features.
6. Preserve the rural character and agrarian heritage of the area.
7. Provide environmental education and interpretive opportunities.
8. Provide buffers to development and community separators.

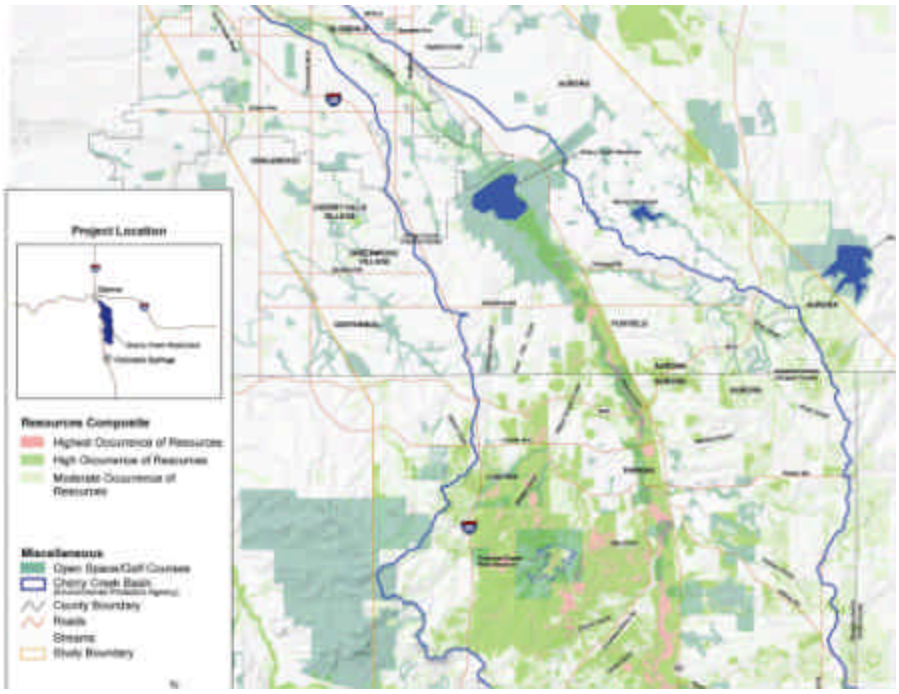
Stewardship Practices

2.0 Water Resources and Water Quality
Goal 2.2 Adopt water quality friendly stream stabilization practices.
•Recommendation 2.2a Encourage natural stream restoration, maintaining stable base flow channels with wide, vegetated floodplains, as opposed to stabilizing eroded channels in place.

Land Conservation Strategy
Water Resources
Proximity to floodplain Adjacent to floodplains
Contains or is part of a ground water recharge area


Project Location
Subwatershed Priorities
Category 1
Category 2
Category 3
Category 4


Project Location
Public Water Supply Wells
Storm Water Outfalls
Point Source Locations (CDPHE)
Water Discharge Locations (EPA)
100-year Floodplain (FEMA)
Subwatersheds
Wetlands (NWI)
Miscellaneous
Cherry Creek Basin
County Boundary
Roads
Streams
Study Boundary



Smart Growth for Clean Water

The Cherry Creek Smart Growth for Clean Water Partnership

- promote the establishment of a continuous natural greenway
- innovative watershed enhancements to protect the water quality and the public enjoyment of Cherry Creek, its tributaries, and the Lake.
- implement this goal through an intergovernmental agreement, best development and conservation practices, citizen education and stewardship, and coordinate existing and identify new funding resources.

Smart Growth for Clean Water

- Advisory and Steering committees
- Water Quality Benefits and Enhancements
- Multiple Partners (local, State, and National)
- Regional Agreement
- Funding Resources
- Phosphorous Coordinator
- Training and Outreach

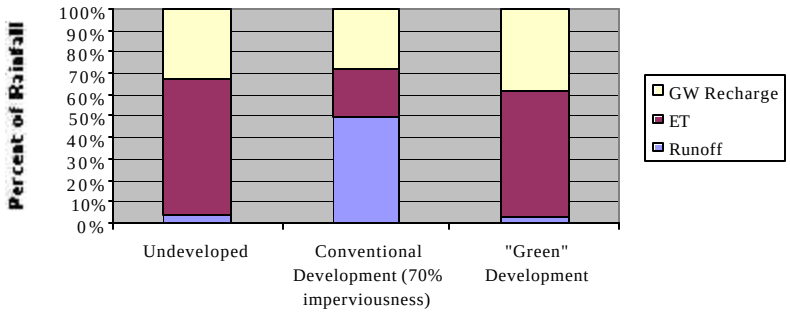
Example Report Findings and Recommendations

Enhanced BMP Opportunities

The proposed concept to reduce stormwater runoff and phosphorus loads from the development consists of three main components.

1. Alternative Street Configuration (grass swales instead of curb and gutter)
2. Upstream Storage and Filtration (porous landscape detention)
3. Storm Irrigation (a pumping system in the retention pond will redistribute the collected stormwater runoff back to the porous landscape areas through an irrigation system)

Figure 3. Comparison of Runoff, Evapotranspiration, and Groundwater Recharge Based on Development Condition



Example Environmental Benefits

Potential total phosphorus reduction as a result of the 40 acres of constructed wetlands

(39.6 Ac wetlands) x (630 lbs per season/37 Ac wetlands) = 674 lb per season

Example Economic Benefit

an apparent problem (increased stormwater runoff) had become an asset that, when properly managed, resulted in an overall improvement for the development proposal.

3.0 KEYS FINDINGS

1) There are innovative strategies that can be implemented to remove the barriers that block implementation of smart growth practices

2) The practice of engaging the developer, land use agencies, and local community in the watershed planning process is a key component in making smart growth techniques viable

3) You can go beyond the minimum level of water quality requirements to substantially reduce runoff volumes and pollutant loading to close to pre-development conditions

4) There are funding options available that can provide economic incentives for innovative site and planning design.

Regional Agreement Signatories

- Arapahoe County
- Centennial
- Centennial Airport
- City & County of Denver
- Douglas County
- Glendale
- Greenwood Village
- Parker

Regulatory Context

- Over 26 separate agencies and jurisdictions have an interest in the watershed's resources
- Lots of mandates, few resources
- Agreement represents chance to extend the progress made by local governments for decision-making in the basin
- Cooperation allows local governments to leverage existing resources and cultivate new ones.

Benefits Realized through Regional Cooperation

- **Local and National Funding** for regional planning and implementation
- **Recognition** as a national model
- **Increased support** for recreation and open space resources
- Open Space and Water Quality **improvements**
- Public Education and Outreach
- Problem solving through **local initiative rather than regulation**.
- Annual conference and Watershed perspective

Adopt goals developed through extensive public process:

Support smart growth practices to mitigate development-induced water quality impacts.

Foster multi-jurisdictional relationships among local governments, state and federal agencies, and local citizens.

Protect and enhance high quality wildlife habitat and recognize the importance of wildlife corridors.

Help meet open space and recreation needs of the region's growing population.

Adopt goals developed through extensive public process:

Protect important cultural and historic features.

Provide environmental education and interpretive opportunities.

Provide buffers to development and community separators.

Provide recommendations on urban design to protect Cherry Creek as a natural amenity.

Help establish trail connectivity between Cherry Creek and adjoining neighborhoods.

•Support regional approaches to water quality improvement in the Cherry Creek basin.

•Where possible apply a variety of tools to accomplish water quality goals, including land conservation and stewardship, public policy and public outreach and education.

•Commit staff and, where approved, financial resources to regional cooperation for improved water quality.

•Coordinate activities with key stakeholders.

•Meet semi-annually to review and advance cooperative efforts and coordinate funding.

•Support a comprehensive and integrated approach to land conservation, water quality protection, public education and recreation in the watershed.

Current and Upcoming Activities

•Phosphorus Coordinator program
•Water Quality Tour
•Source Water Forum
•EPA Smart Growth Grant
•Report
•Demonstration Projects

The Future

- Continued development of strong working relationship with program Partners
- The Partners will continue to play a vital role in the watershed, working to develop effective integrated stewards.
- New projects and partnerships will develop as new opportunities present themselves.
- Integrating Source Water Protection
- Leverage further opportunities to increase effectiveness and implementation

There are still many challenges